

In the Claims

CLAIMS

1. (Currently amended) A method of at least partially forming a capacitor comprising:

forming a capacitor storage node layer over a substrate, the capacitor storage node layer having an uppermost rim defining an opening into an interior volume; and

prior to forming a capacitor dielectric layer, forming a cap by capping at least a portion of the rim within the interior volume by forming a material which is different from the capacitor storage node layer over the rim portion.

2. (Previously presented) The method of claim 1, wherein the capping of the rim portion comprises forming an insulative material thereover.

3. (Previously presented) The method of claim 1, wherein the capping of the rim portion comprises forming an insulative material within less than an entirety of the interior volume.

4. (Previously presented) The method of claim 1, wherein the capping of the rim portion comprises forming an insulative material layer over the substrate and anisotropically etching the insulative material layer.

5. (Previously presented) The method of claim 1 further comprising prior to the capping of the rim portion, filling less than the interior volume with a filler material which is present during the capping.

6. (Previously presented) The method of claim 1 further comprising prior to the capping of the rim portion, filling less than the interior volume with a filler material which is present during the capping, and wherein the capping of the rim portion comprises forming an insulative material layer over the substrate and the filler material and anisotropically etching the layer.

7. (Previously presented) The method of claim 1, wherein the forming of the capacitor storage node layer comprises:

forming a container into a container-defining material over the substrate;  
forming a capacitor storage node layer within the container; and  
recessing the capacitor storage node layer to below an uppermost surface of the container-defining material.

8. (Previously presented) The method of claim 7, wherein the capacitor storage node layer comprises roughened polysilicon.

9. (Previously presented) The method of claim 1, wherein the forming of the capacitor storage node layer comprises:

forming a container into a container-defining material over the substrate;

forming a capacitor storage node layer within the container;

recessing the capacitor storage node layer to below an uppermost surface of the container-defining material; and

after the capping of the rim portion, removing at least some of the container-defining material.

10. (Previously presented) The method of claim 9, wherein the removing of the container-defining material comprises removing said container-defining material selectively relative to the capping material which is formed over the rim portion.

11. (Previously presented) The method of claim 1, wherein the forming of the capacitor storage node layer comprises:

forming a container into a container-defining material over the substrate;

forming a capacitor storage node layer within the container;

recessing the capacitor storage node layer to below an uppermost surface of the container-defining material; and

wherein the capping of the rim portion comprises forming an insulative material layer over the substrate and anisotropically etching the insulative material layer.

12. (Previously presented) The method of claim 1, wherein the forming of the capacitor storage node layer comprises:

forming a container into a container-defining material over the substrate;

forming a capacitor storage node layer within the container;

recessing the capacitor storage node layer to below an uppermost surface of the container-defining material; and

further comprising prior to the capping of the rim portion, filling less than the interior volume with a filler material.

13. (Previously presented) The method of claim 1, wherein the forming of the capacitor storage node layer comprises:

forming a container into a container-defining material over the substrate;

forming a capacitor storage node layer within the container;

recessing the capacitor storage node layer to below an uppermost surface of the container-defining material; and

further comprising prior to the capping of the rim portion, filling less than the interior volume with a filler material, and

wherein the capping of the rim portion comprises forming an insulative material layer over the substrate and the filler material and anisotropically etching the insulative material layer.

14. (Currently amended) A method of at least partially forming a capacitor comprising:

forming a capacitor storage node layer over a substrate, the capacitor storage node layer having an uppermost rim defining an opening into an interior volume; and

forming a layer of material over the uppermost rim within only an upper portion of the interior volume.

15. (Previously presented) The method of claim 14, further comprising anisotropically etching said layer of material sufficient to leave a portion of the material occluding the opening.

16. (Previously presented) The method of claim 14, further comprising anisotropically etching said layer of material sufficient to leave a portion of the material extending into the interior volume.

17. (Previously presented) The method of claim 14, further comprising anisotropically etching said layer of material sufficient to leave a portion of the material extending into the interior volume and occluding the opening.

18. (Previously presented) The method of claim 14, wherein the forming of the layer of material comprises forming a portion of said layer to contact the storage node layer.

Claims 19-52 (Canceled).

53. (Currently amended) The method of claim 1, further comprising, after capping the rim, forming a the capacitor dielectric layer ~~region~~ and a cell electrode layer over the capacitor storage node layer within the interior volume.

54. (Previously presented) The method of claim 14, further comprising anisotropically etching the layer of material.

55. (Previously presented) A method of forming a capacitor comprising:  
forming a capacitor storage node layer comprising roughened polysilicon over a substrate, the capacitor storage node layer having an uppermost rim defining an opening into an interior volume;

forming an insulative cap by capping at least a portion of the rim within the interior volume by forming a material which is different from the capacitor storage node layer over the rim portion; and

after the capping of the rim, forming a capacitor dielectric region and a cell electrode layer over the capacitor storage node layer.

56. (Previously presented) The method of claim 55, wherein capping comprises forming an insulative material within less than an entirety of the interior volume.

57. (Previously presented) The method of claim 55, wherein capping comprises forming an insulative material layer over the substrate and anisotropically etching the insulative material layer.

58. (Previously presented) The method of claim 55, further comprising, prior to capping, filling less than the interior volume with a filler material which is present during capping.



59. (Previously presented) The method of claim 55, further comprising, prior to capping, filling less than the interior volume with a filler material which is present during capping, and wherein capping comprises forming an insulative material layer over the substrate and the filler material and anisotropically etching the insulative material layer.

60. (Previously presented) The method of claim 55, wherein forming the capacitor storage node layer comprises:

- forming a container into a container-defining material over the substrate;
- forming the capacitor storage node layer within the container; and
- recessing the capacitor storage node layer to below an uppermost surface of the container-defining material.

61. (Previously presented) The method of claim 55, wherein forming the capacitor storage node layer comprises:

- forming a container into a container-defining material over the substrate;
- forming the capacitor storage node layer within the container;
- recessing the capacitor storage node layer to below an uppermost surface of the container-defining material; and
- after capping, removing at least some of the container-defining material.

62. (Previously presented) The method of claim 61, wherein removing the container-defining material comprises removing said container-defining material selectively relative to the capping material which is formed over the rim portion.

63. (New) A method of at least partially forming a capacitor comprising:  
forming a capacitor storage node layer over a substrate, the capacitor storage node layer having an uppermost rim defining an opening into an interior volume;  
forming a cap by capping at least a portion of the rim within the interior volume by forming a material which is different from the capacitor storage node layer over the rim portion; and  
prior to the capping of the rim portion, filling less than the interior volume with a filler material which is present during the capping.

64. (New) The method of claim 63, wherein the capping of the rim portion comprises forming an insulative material layer over the substrate and the filler material and anisotropically etching the layer.

65. (New) A method of at least partially forming a capacitor comprising:  
forming a capacitor storage node layer over a substrate, the capacitor storage node layer having an uppermost rim defining an opening into an interior volume; and  
forming a cap by capping at least a portion of the rim within the interior volume by forming a material which is different from the capacitor storage node layer over the rim portion, wherein the forming of the capacitor storage node layer comprises:  
forming a container into a container-defining material over the substrate;  
forming a capacitor storage node layer within the container;  
recessing the capacitor storage node layer to below an uppermost surface of the container-defining material; and  
after the capping of the rim portion, removing at least some of the container-defining material.

66. (New) The method of claim 65, wherein the removing of the container-defining material comprises removing said container-defining material selectively relative to the capping material which is formed over the rim portion.

67. (New) A method of at least partially forming a capacitor comprising:

forming a capacitor storage node layer over a substrate, the capacitor storage node layer having an uppermost rim defining an opening into an interior volume; and

forming a cap by capping at least a portion of the rim within the interior volume by forming a material which is different from the capacitor storage node layer over the rim portion, wherein the forming of the capacitor storage node layer comprises:

forming a container into a container-defining material over the substrate;

forming a capacitor storage node layer within the container;

recessing the capacitor storage node layer to below an uppermost surface of the container-defining material; and

further comprising prior to the capping of the rim portion, filling less than the interior volume with a filler material.

68. (New) A method of at least partially forming a capacitor comprising:

forming a capacitor storage node layer over a substrate, the capacitor storage node layer having an uppermost rim defining an opening into an interior volume; and

forming a cap by capping at least a portion of the rim within the interior volume by forming a material which is different from the capacitor storage node layer over the rim portion, wherein the forming of the capacitor storage node layer comprises:

forming a container into a container-defining material over the substrate;

forming a capacitor storage node layer within the container;

recessing the capacitor storage node layer to below an uppermost surface of the container-defining material; and

further comprising prior to the capping of the rim portion, filling less than the interior volume with a filler material, and

wherein the capping of the rim portion comprises forming an insulative material layer over the substrate and the filler material and anisotropically etching the insulative material layer.

69. (New) A method of forming a capacitor comprising:

forming a capacitor storage node layer over a substrate, the capacitor storage node layer having an uppermost rim defining an opening into an interior volume;

forming a cap by capping at least a portion of the rim within the interior volume by forming a material which is different from the capacitor storage node layer over the rim portion; and

after capping the rim, forming a capacitor dielectric region and a cell electrode layer over the capacitor storage node layer within the interior volume.